ChocoAnalyzer

- The next generation of chocolate crystallisation quality measuring.

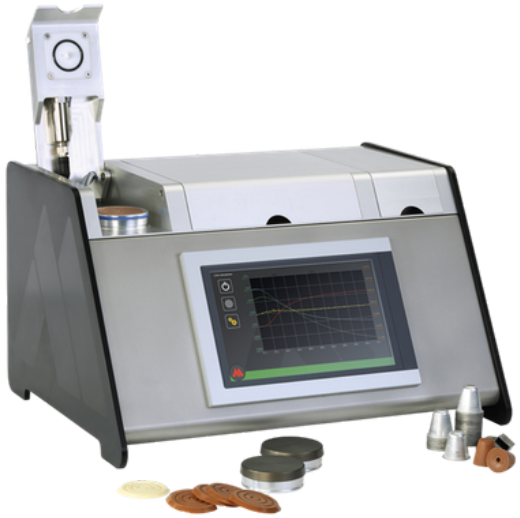


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Quality Improvement of Chocolate

ChocoAnalyzer measuring methods:

- Contraction
- Crystal Melting Point (CMP)
- Line simulator
- ChocoMeter+



Key benefits

- Simulates your cooling tunnel during production and thereby being able to see the effects of your cooling on the contraction
- Enables you to quality assure the production by measuring the maximum contraction
- Gives you the possibility to adjust the temper to achieve the maximum contraction
- Enables you to investigate the difference in tempering quality on various equipment
- Enables you to measure how filling expands or contracts in relation to the chocolate, thereby avoiding cracks in pralines caused by pressure/vacuum from the filling
- Helps you to understand and thereby extend the lifetime of your products in relation to migration and bloom
- Provides you with a new chapter in chocolate science – and a world of new opportunities.

Quality Improvement of Chocolate

Why ChocoAnalyzer?
With our commitment for decades to innovation and custom-made solutions within the chocolate industry we are always striving to find new solutions for processes and machinery.

One of our cornerstones are tempering machines. Dr. Kaj Aasted invented the very first plate temper in 1947 and hereafter we have dedicated ourselves to continously innovate and improve the tempering process.

We found the lack of a better, easier and more comprehensive method to determine the quality of chocolate during production.

Especially we found a need to find the correlation between crystal form and the degree of contraction. With the ChocoAnalyzer you can investigate the influence of tempering on the contraction.

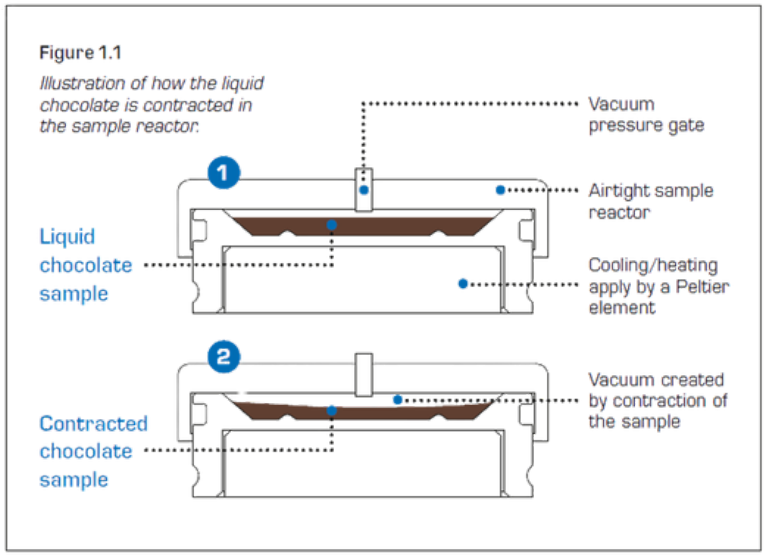
New possibilities within documentation and research of your production
For many years the only way of easy documentation has been the tempermeter.

The tempermeter gives you a limited information of your production by only telling you how much latent heat comes from the crystallisation at a certain temperature when cooling a certain amount of chocolate at 8ºC.

In our research to improve the existing measurement methods we have developed not just one but several new measurement opportunities for the benefit of the entire chocolate and confectionery industry.

The development of the ChocoAnalyzer was performed in cooperation with AAK and their scientists.

The ChocoAnalyzer Sample Reactor



"The ChocoAnalyzer is developed in close cooperation with leading scientist from AAK"

AAK

Bjarne Juul

Principal Research Scientist, AAK
Chocolate & Confectionery
Product & Technology Development

The sample reactor

In order to achieve the best results a sample reactor was developed.

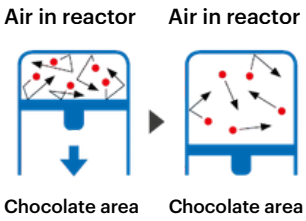
The reactor is an airtight closed system produced in aluminum in order to obtain a high heat transfer coefficient to ensure sufficient heating or cooling.

Figure 1.1 illustrates the contraction of a chocolate sample. The vacuum created due to the contraction is measured by the pressure gate.

The ideal gas equation

According to physics, an inverse relationship exists between pressure and volume (pV = nRT).

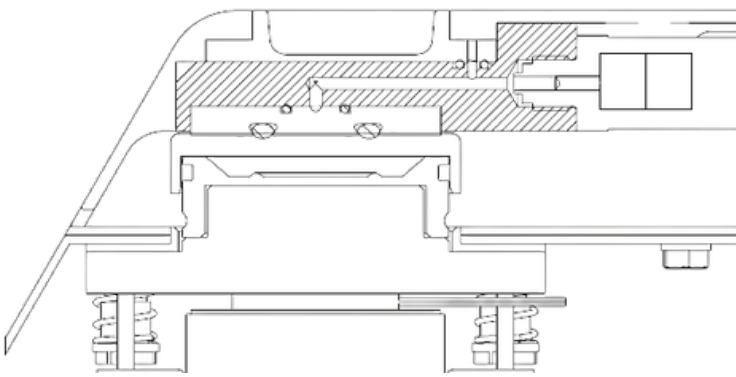
To make precise measurements new probes were designed. They use the most precise pressure gates on the market and this gives a possibility to calculate the percentage of contraction in the chocolate. This is done by measuring the decreased pressure in the sample reactor.



Decreasing volume of chocolate creates vacuum in sample reactor. The Ideal gas equation calculates the actual contraction created from the crystallisation of the fat.



The sample reactor within the ChocoAnalyzer instrument.



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Measuring Methods

Contraction

- Enables you to optimise your tempering machine and cooling tunnel settings so you will achieve the maximum contraction
- Provides you with a new possibility to measure contraction
- Easy data extraction.

Crystal Melting Point (CMP)

- Easily locate the melting point of the crystals
- Optimises your settings on the tempering machine so you will have the highest possible melting point
- Investigates the difference of melting points from different types of tempering machines.

Line Simulator

- Easily simulate your cooling profile from your cooling tunnel, and thereby discover when your chocolate has reached its maximum contraction with your chosen cooling profile
- Notifies you when the primary crystallisation is done.

ChocoMeter+

- The ChocoMeter is the Aasted tempermeter and calculates and displays the chocolate temper curve and temper Index.
- Can run simultaneously with ChocoAnalyzer.

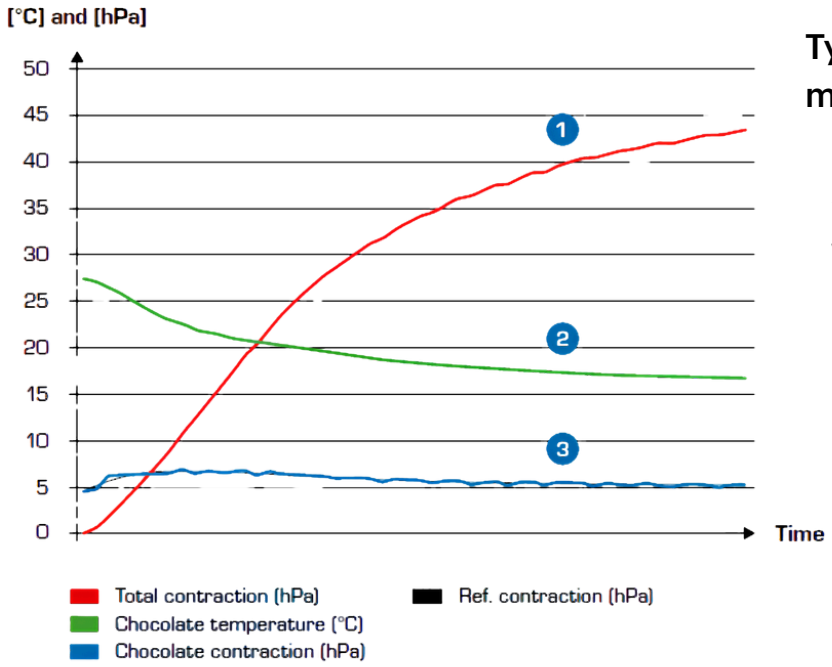
Practical use of the ChocoAnalyzer

- Measure the influence of the chocolate outlet temperature of the temper on the final contraction
- Investigate how the index from the ChocoMeter influences the contraction
- Measure how different fats and amounts hereof affects the contraction
- Measure how different tempering methods affects the contraction
- Measure if the particle size affects the contraction
- Measure how filling expands or contracts in relation to the chocolate
- Measure how the cooling profile affects the contraction
- Investigate when you reach the maximum crystallisation
- Easily locate the melting point of the crystals
- Provides you with a temper curve, and related information.


“Gives you a unique possibility to quality assure and improve you production and contribute with new knowledge to your research”

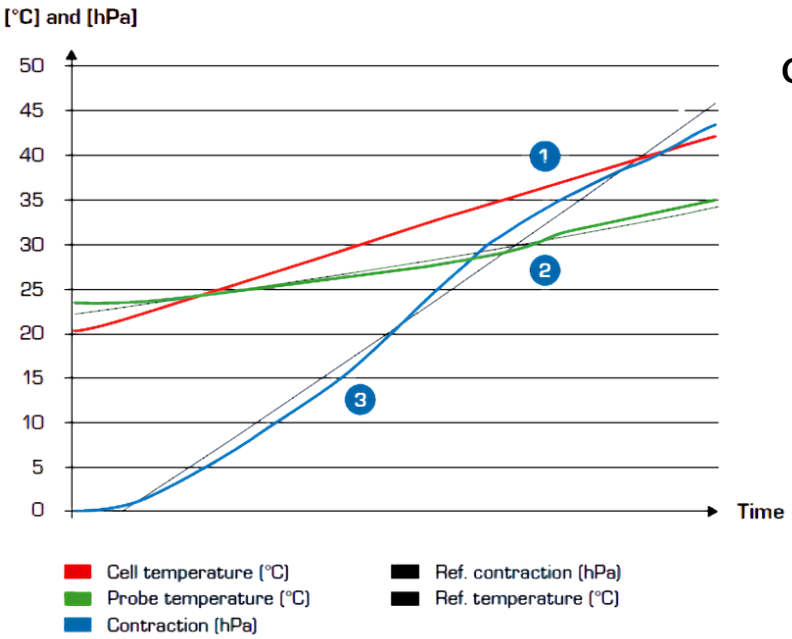
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Measuring Examples



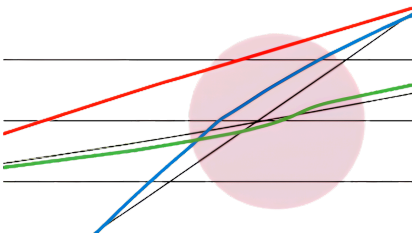
Typical line simulation measuring progress

1. Total contraction
2. Temper curve
3. Crystallisation contraction



Crystal Melting Point (CMP)

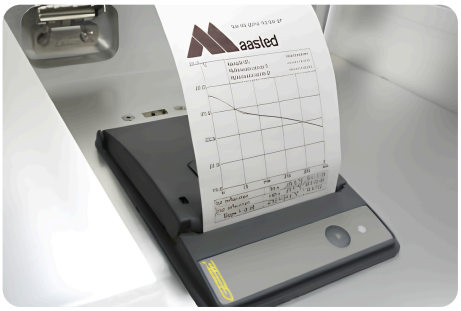
1. Cell temperature. Heating at 1°C per minute
2. Temper curve
3. Contraction curve



The result shows the Crystal Melting Point at 30°C

"Everybody can use the ChocoAnalyzer"







Intuitive user interface
The software and user interface of the ChocoAnalyzer are developed for users by users, especially produced by Aasted for the chocolate industry.
The user interface is intuitive and built on the vision that the user can easily control the machine using apps.

The ChocoAnalyzer software can easily be updated via USB.

ChocoAnalyzer apps
- General setup
- Contraction
- Line simulator
- Crystal Melting Point (CMP)
- ChocoMeter+
- Expert mode

Specifications
- Data is transferred via an Ethernet or USB 3.0 connection – directly in csv format to user laptop for insertion in Excel
- Integrated printer
- 10" colour touch screen
- Compact, sturdy and comes complete in a lockable transport case with sample reactor, test cups, paper rolls, cables, EMC certificate and manual.

Dimensions

Height	284 mm
Height	516 mm
Height	401 mm
Height	25.9 kg

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